

English Substitution of Metric Reinforcement Bars (BDE)

Effective: April 1, 1996

Revised: July 15, 1997

This special provision consists of giving the Contractor the option of replacing metric reinforcement bars as shown on the plans with English size reinforcement bars or metric size bars which have been soft converted. Soft Conversion is an exact conversion to the nearest millimeter.

Reinforcement for Structures:

A metric reinforcement bar shown on the plans may be replaced bar for bar with the next size English bar or soft converted metric reinforcement bar of equal or greater cross-sectional area. The exception is the #5 English bar or #16 soft converted metric bar may be substituted bar for bar for the #15 metric bar shown on the plans.

For slab bridges and slabs of culverts, revaluation of the slab design will be required prior to any reinforcement bar substitutions. The Contractor shall submit the design to the Bridge Office for approval.

Metric Size Shown on the Plans	Area mm ²
#10	100
#15	200
#20	300
#25	500
#30	700
#35	1000
#45	1500

English Size	Metric Size Soft Converted (ASTM A 615 m - 96a)	Area mm ²
#4	#13	127
#5	#16	198
#7	#22	388
#8	#25	507
#10	#32	817
#11	#36	1007
#18	#57	2581

Reinforcement for Pavement:

For English substitution of metric bars in pavements and appurtenances the Contractor may use the given English sizes shown on the Standards or metric size bars which have been soft converted, as shown in this specification, except for continuously reinforced pavement.

For English reinforcement or metric size bars which have been soft converted, substitution in continuously reinforced pavement, the following table shall be used in conjunction with Standard 421001, Bar Reinforcement for Continuously Reinforced PCC Pavement.

Metric Project Information		May Use The English Bars For Metric Project at the Spacing and Dimensions Shown					
Metric Bar Size	Pavement Thickness	English Bar Substitution	Metric Size Soft Converted (ASTM A 615 M - 96a)	(A) Approximate Spacing	(B)	(C)	(D)
#20	200 thru 220	#6	#19	18 spaces (19 bars)@ 190	100	80	560
#20	230 thru 250	#6	#19	21 spaces (22 bars)@ 160	130	110	560
#20	260 thru 280	#6	#19	23 spaces (24 bars)@ 145	140	125	560
#20	290 thru 310	#6	#19	26 spaces (27 bars)@ 130	120	100	560
#20	320 thru 340	#6	#19	29 spaces (30 bars)@ 115	140	125	560
#25	230 thru 250	#7	#22	15 spaces (16 bars)@ 225	125	100	660
#25	260 thru 280	#7	#22	17 spaces (18 bars)@ 200	110	90	660
#25	290 thru 310	#7	#22	19 spaces (20 bars)@ 180	100	80	660
#25	320 thru 340	#7	#22	21 spaces (22 bars)@ 160	130	110	660
#25	350 thru 370	#7	#22	23 spaces (24 bars)@ 145	140	125	660
#25	380 thru 400	#7	#22	25 spaces (26 bars)@ 135	125	100	660
#25	410 thru 430	#7	#22	27 spaces (28 bars)@ 125	125	100	660

No additional payment will be made for any additional weight of steel furnished in substituting English size reinforcement bars or metric size reinforcement which have been soft converted for metric bars shown on the plans.

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